User's Manual

Model 701955 Bridge Head (NDIS-120 Ω, Enhanced Shield) Model 701956 Bridge Head (NDIS-350 Ω, Enhanced Shield)

YOKOGAWA
Yokogawa Electric Corporation

IM 701955-01E
1st Edition

Foreword

Thank you for purchasing the bridge head (701955/701956).
This User's Manual contains useful information about the function, procedures in connecting the gauge, and handling precautions of the bridge head. To ensure correct use, please read this manual thoroughly before operation.
Keep the manual in a safe place for quick reference in the event a question arises.

Notes

- The contents of this manual are subject to change without prior notice as a result of continuing improvements to the device's performance and functions.
- Every effort has been made in the preparation of this manual to ensure the accuracy of its contents. However, should you have any questions or find any errors, please contact your nearest YOKOGAWA dealer as listed on the back cover of this manual.
- Copying or reproducing all or any part of the contents of this manual without YOKOGAWA's permission is strictly prohibited.

Revisions

- 1st Edition: February, 2003

Disk No. DL40
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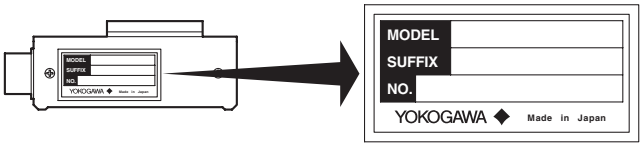
Checking the Contents of the Package

Unpack the box and check the contents before using the device. If the contents are not correct or missing or if there is physical damage, contact the dealer from which you purchased them.

Bridge Head

Check that the model name given on the name plate match that on the order. When contacting the dealer from which you purchased the device , please quote the device No.



Model

Model	Specifications	Description
700955	Bridge resistance 120 Ω	NDIS type, enchanced shield
700956	Bridge resistance 350 Ω	NDIS type, enchanced shield

No. (Device number)

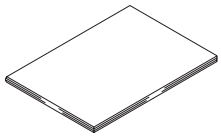
When contacting the dealer from which you purchased the device, please quote this number.

Standard Accessories

NDIS cable
(for 701955, 701956)
B8023WN
Length: 5 m

Attaching Plate
B9947DU
2 Binding screws
(M3 × 5 mm)

This User's Manual



Conventions Used in this Manual and on the Device

Symbols Used on the Device

GND terminal

The operator must refer to an explanation in the User's Manual.

Symbols Used in this Manual

Note Provides important information for the proper operation of the device.

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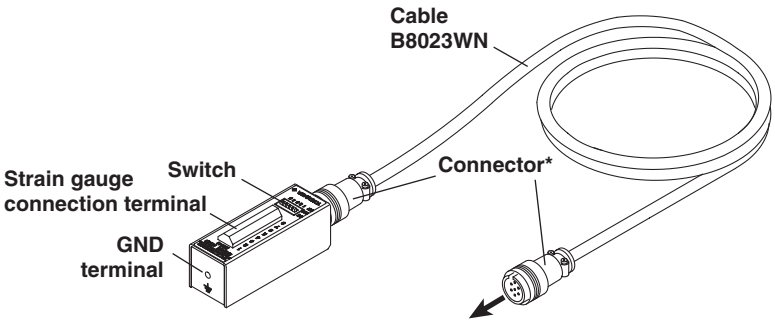
1 Construction of the Device

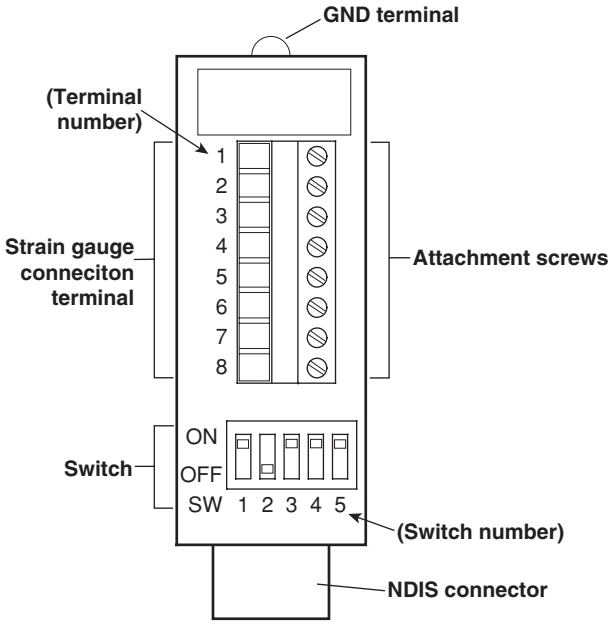
- The bridge head is a converter for inputting the amount of change of the resistance of the strain gauge to the amplifier. Six types of connection methods (single-gauge, single-gauge three-wire, adjacent-side two-gauge, opposed-side two-gauge, opposed-side two-gauge three-wire, and four-gauge) are supported by setting the switch.
- Shielded cable (B8023WN) is used.

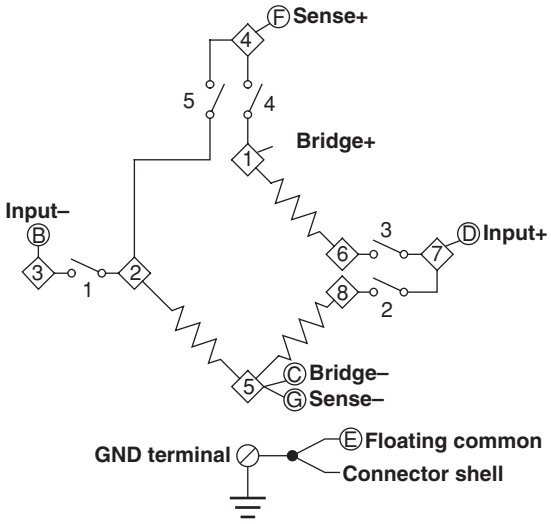
Names of the Parts



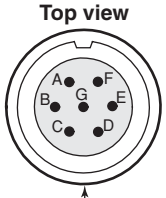
* A connector recommended by JSNDI (The Japanese Society for Non-destructive Inspection)

Terminals and Circuit Diagram





Pin assignments of the NDIS connector (Bridge head side)



Pin number	Signal name
A	Bridge+ (Bridge voltage +)
B	Input– (Measurement signal –)
C	Bridge– (Bridge voltage –)
D	Input+ (Measurement signal +)
E	Floating common
F	Sense+ (Sensing of the bridge voltage +)
G	Sense– (Sensing of the bridge voltage –)

connector shell*

* The connector shell connects the bridge head to the cable's shielding.

Terminal No.	Signal name
1	Bridge+
3	Input–
4	Sense+
5	Bridge– (Sense–)
7	Input+

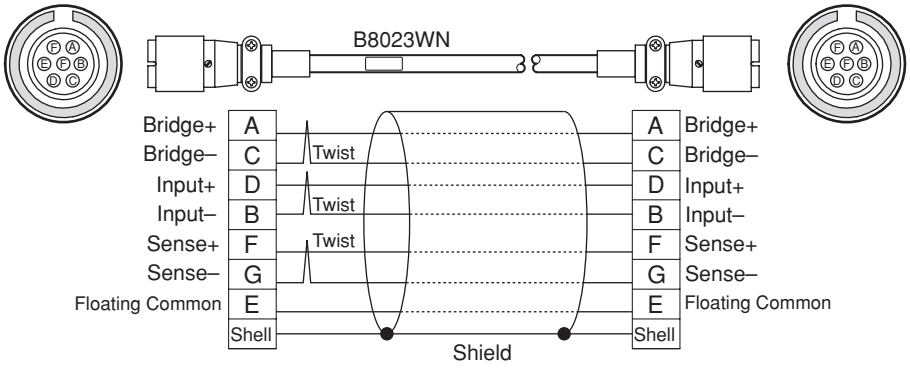
1 through 8 are the terminal numbers.

1 through 5 are switch numbers.

Ⓐ through Ⓖ are the connector pin numbers.

Wiring for Accessory Cable B8023WN

A wiring diagram for the accessory cable is given below. The connector shell connects to the shielding.



Note

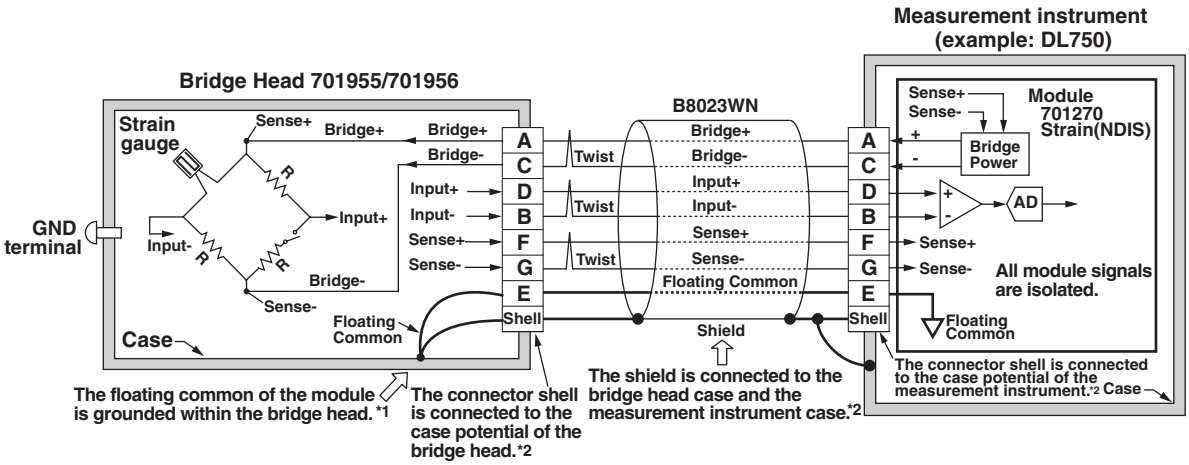
Check the shape and pin assignment of the connector before connecting it to the accessory cable.

Circuit Diagram for Bridge Head and Measuring Instrument

The circuit diagram below shows the bridge head connected to a measuring instrument (the DL750). Isolate the strain gauge before use.

CAUTION

Do not connect the strain gauge terminal to any items with electric potential.



***1 The GND (floating common) of the module is connected to the case potential inside the bridge head.**
***2 The bridge head case, the cable shield, and the measurement instrument case are connected as measures against noise.**

2 Connecting the Strain Gauge

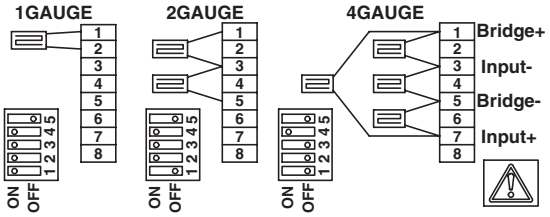
The bridge head can support six types of connection methods: single-gauge, single-gauge three-wire, adjacent-side two-gauge, opposed-side two-gauge, opposed-side two-gauge three-wire, and four-gauge.
Do not connect the strain gauge terminal to any items with electric potential.

CAUTION

Do not connect the strain gauge terminal to any items with electric potential.

Use the lead wires included with the strain gauge or wires meeting the following specifications to connect the strain gauge and the bridge head.

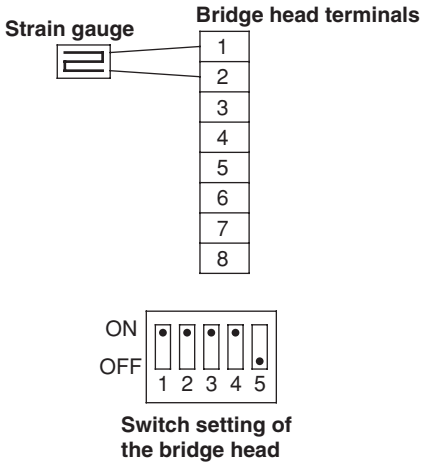
- Usable wire: single wire ϕ 0.14 to 1.5 mm^2, or stranded wire 0.14 to 1.5 mm^2 (AWG26 to 16)
- Normal length of bare wire : 6 mm
- The connection diagrams of several typical gauge methods are indicated on the side of the bridge head.



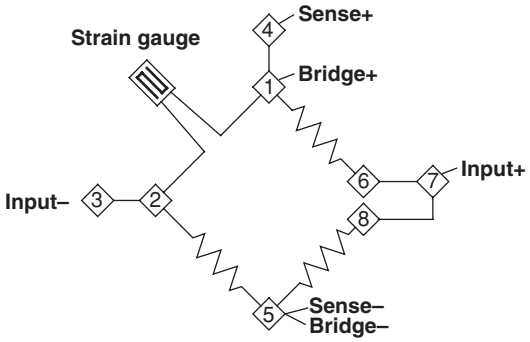
Note

- Isolate the strain gauge before use.
- Make the wires between the strain gauge and bridge head as short as possible.
- Proper measurements may not be possible in an environment where electromagnetic interference exists.
- If you are shielding the strain gauge, connect the shield wire to the floating common terminal of the bridge head.
- For the handling of the strain gauge, see the instruction manual that came with the shield gauge.

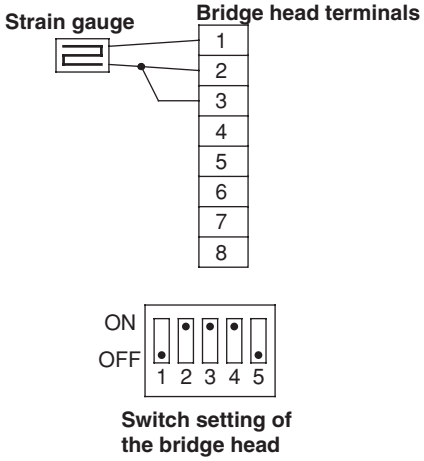
Single-gauge Method



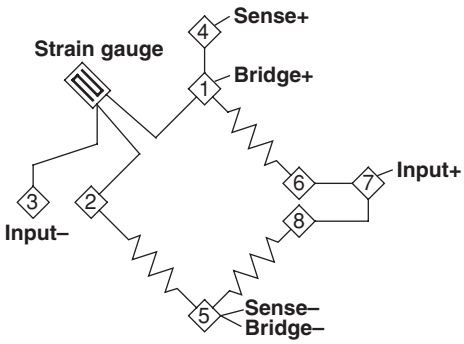
Switch setting of the bridge head



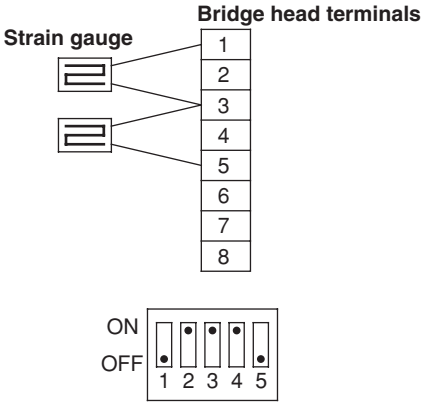
Single-gauge Three-wire Method



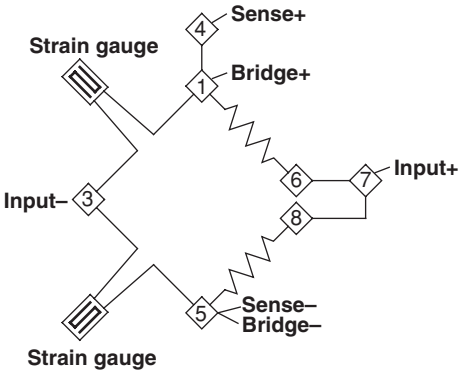
Switch setting of the bridge head



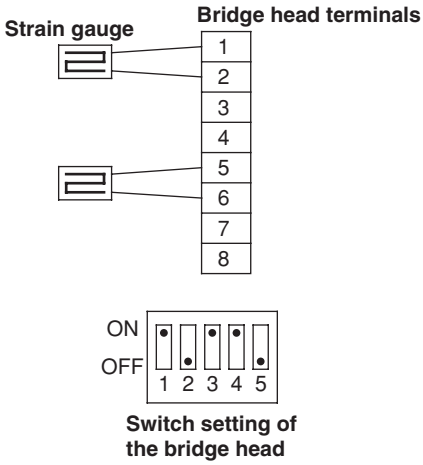
Adjacent-Side Two-gauge Method



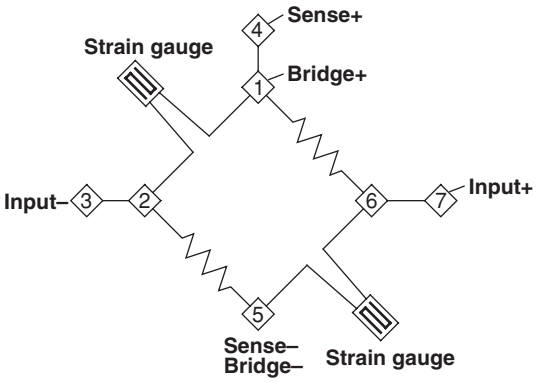
Switch setting of the bridge head



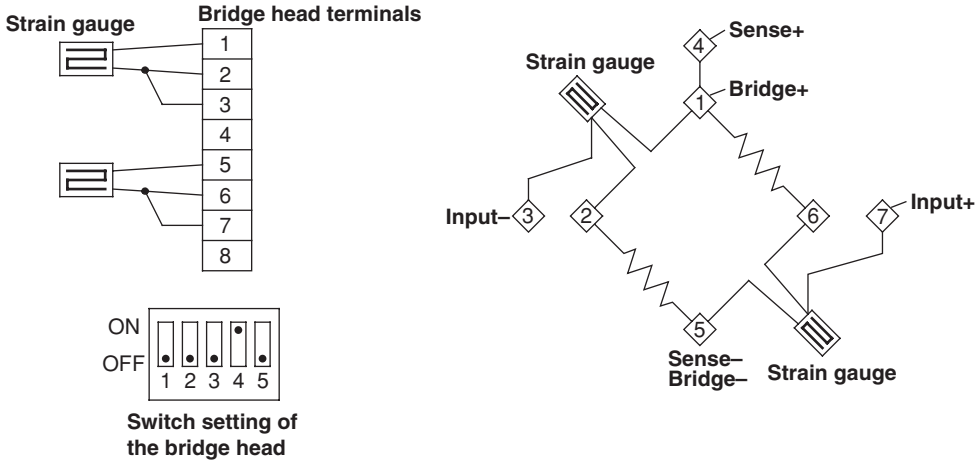
Opposed-Side Two-gauge Method



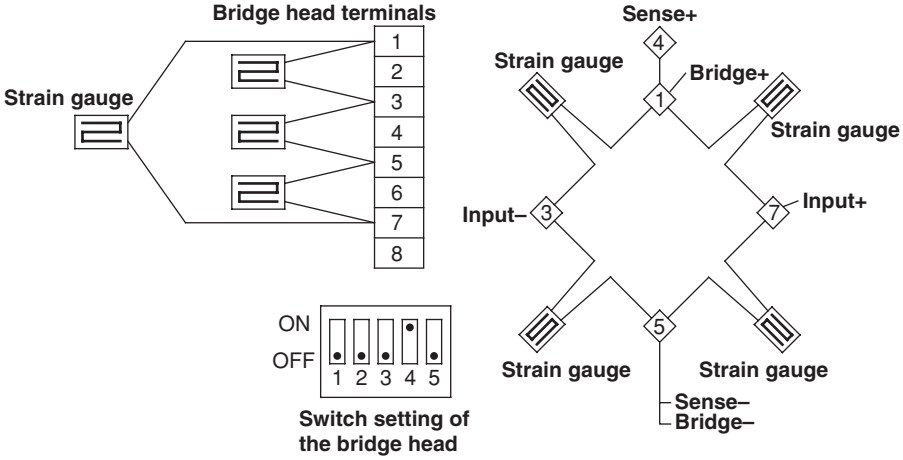
Switch setting of the bridge head



Opposed-Side Two-gauge Three-wire Method



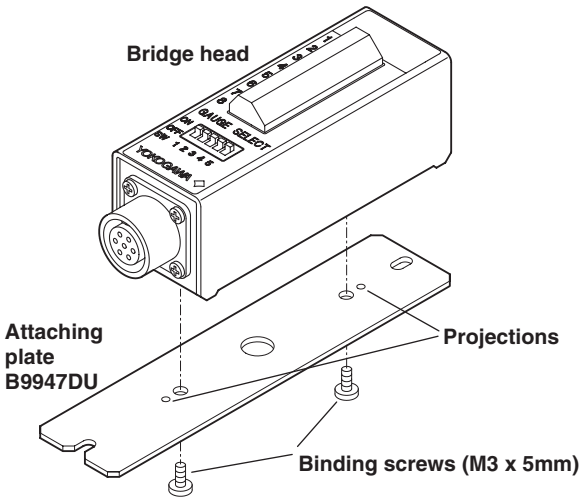
Four-gauge Method



3 Fixing the Device in Place

If necessary, you can use the accessory attaching plate, B9947-DU, to fix the bridge head to the panel.

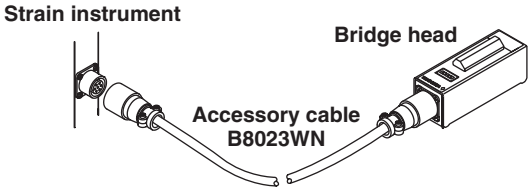
1. Align the small holes on the bottom side of the bridge head to the small projections of the attaching plate.
2. Screw the bridge head and the attaching plate together using the accessory binding screws (M3 × 5 mm).



4 Connecting to the Strain Instrument

The bridge head uses a NDIS connector*. The accessory cable, B8023WN, is used to connect to the strain instrument.

* A connector recommended by JSNDI (The Japanese Society for Non-destructive Inspection)



5 Specifications

Bridge resistance

Model 701955: 120 Ω
Model 701956: 350 Ω

Applicable gauge methods

Single-gauge
Single-gauge three-wire
Adjacent-side two-gauge
Opposed-side two-gauge
Opposed-side two-gauge three-wire
Four-gauge

Operating conditions

Temperature: 5 to 40°C
Humidity: 20 to 85% RH

External dimensions

Approx. 37(W) × 97(H) × 30(D) mm

Weight

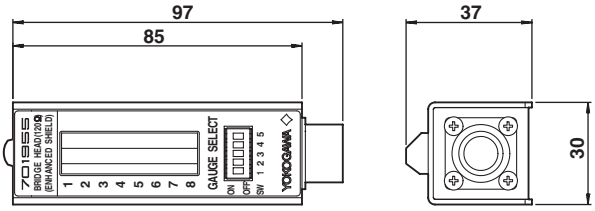
Approx. 85 g (Bridge head only)

Standard accessories

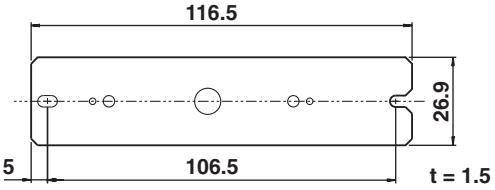
Cable (part no.: B8023WN):	1 piece, with NDIS connector, 5 m in length
Attaching plate (part no.: B9947DU):	1 piece, with two M3 binding screws
User's manual:	1 piece, this manual

External drawings

Bridge head



Attaching plate



YOKOGAWA

YOKOGAWA ELECTRIC CORPORATION

Headquarters
2-9-32, Nakacho, Musashino-shi, Tokyo, 180-8750 JAPAN

Sales Headquarters
2-9-32, Nakacho, Musashino-shi, Tokyo, 180-8750 JAPAN
Phone : 81-422-52-6194

Branch Sales Offices
Nagoya, Osaka, Hiroshima, Fukuoka, Sapporo, Sendai, Ichihara, Toyoda, Kanazawa, Takamatsu, Okayama, and Kitakyusyu.

Overseas Representative Offices / Service Centers
Beijing, Shanghai (The People's Republic of China), Jakarta (Indonesia), Kuala Lumpur (Malaysia), Bangkok (Thailand)

YOKOGAWA CORPORATION OF AMERICA

Headquarters
2 Dart Road, Newnan, Ga. 30265-1094, U.S.A.
Phone : 1-770-253-7000
Fax : 1-770-251-0029

Branch Sales Offices / Detroit, Chicago, Los Angeles, New Jersey, Oklahoma, Texas, San Jose, Stafford

YOKOGAWA EUROPE B. V.

Headquarters
Databankweg 20 Amersfoort 3821 AL, THE NETHERLANDS
Phone : 31-334-64-1611 Fax : 31-334-64-1610

Branch Sales Offices / Wien (Austria), Zaventem (Belgium), Ratingen (Germany), Madrid (Spain), Runcorn (United Kingdom), Milano (Italy), Velizy Villacoublay (France), Johannesburg (Republic of South Africa), Budapest (Hungary), Stockholm (Sweden)

YOKOGAWA AMERICA DO SUL S.A.

Praca Acapulco, 31 - Santo Amaro. Sao Paulo/SP - BRAZIL
Phone : 55-11-5681-2400 Fax : 55-11-5681-1274

YOKOGAWA ELECTRIC ASIA PTE. LTD.

Head Office
5 Bedok South Road, 469270 SINGAPORE
Phone : 65-6241-9933 Fax : 65-6241-2606

YOKOGAWA ELECTRIC KOREA CO., LTD.

Head Office
420-5, Chongchun - 2dong, Pupyong - ku Inchon, 403-032 KOREA
Phone : 82-32-510-3107 Fax : 82-32-529-6304

YOKOGAWA AUSTRALIA PTY. LTD.

Head Office (Sydney)
Centrecourt D1, 25-27 Paul Street North, North Ryde,
N.S.W.2113, AUSTRALIA
Phone : 61-2-9805-0699 Fax : 61-2-9888-1844

YOKOGAWA BLUE STAR LTD.

Head Office
40 / 4 Lavelle Road, Bangalore 560 001, INDIA
Phone : 91-80-2271513 Fax : 91-80-2274270

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